REMARKS

Claims 1-14 are pending. By this amendment, claims 1 and 8 are amended. The amendments are supported by the specification at least at page 5, lines 23-25.

Applicants thank Examiner Chakrabarti for consideration and acknowledgement of the references submitted with the Information Disclosure Statement and Form PTO-1449 dated January 29, 2002.

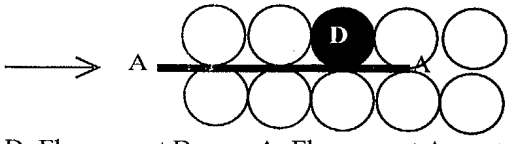
Claims 1-14 have been rejected under 35 USC § 102(a) as being anticipated by Gilmanshin et al. (US Patent 6,263,286 B1). It is asserted in the Office Action that Gilmanshin et al. discloses a method of single molecule identification of a target DNA molecule in a random coil state comprising attaching an optically distinguishable material to a DNA sequence recognition unit, hybridizing the DNA sequence recognition unit to the target DNA molecule, stretching the hybridized DNA complex to a substantially linear configuration, and detecting the optically distinguishable material in a sequential manner to identify the target DNA molecule. It is further asserted that Gilmanshin et al. discloses a method of identification comprising stretching a hybridized DNA complex to a substantially linear configuration, attaching an optically distinguishable material to a DNA sequence recognition unit, hybridizing the DNA sequence recognition unit to a target DNA molecule to form a hybridized DNA complex, and detecting the optically distinguishable material along the substantially linear hybridized DNA complex. Applicants respectfully traverse the rejection for at least the following reasons.

Gilmanshin et al. discloses methods of analyzing polymers using an autocorrelation function to determine structure. The methods can be used to determine a nucleic acid sequence. The methods of sequence determination, as shown, for example, in Fig. 5B of Gilmanshin et al., and in Figure 1 below (derived from Fig. 5B), depend on identification and correlation of an object-dependent impulse generated by the interaction of a unit specific marker and a station. An "object-dependent impulse" is defined at column 8, lines 32-36, as a detectable physical quantity that conveys information about the structural characteristics of at least one unit-specific marker. The object-dependent impulse

can be generated from an energy transfer, excitation, quenching, changes in conductance, or other physical changes (*see* col. 8, lines 59-67). Optical detection of the object-dependent impulse refers to detection of a light-based electromagnetic radiation signal by an imaging system (*see* col. 9, lines 5-8).

Gilmanshin et al. detects a unit specific marker identifying a polymer by identification of an object-dependent impulse, such as a light signal generated by an interaction between the unit-specific marker on the polymer and a station. The unit-specific marker is a fluorescent dye, groove binder, intercalator, protein, or other like object that is, by itself, not visually detectable (*see* col. 8, lines 44-55) without interaction with a station. No visually detectable unit-specific markers are used.

Gilmanshin et al. discloses the use of beads as a station in a method of determining a polymer sequence. *See* Fig. 5B and column 24, line 61, to column 26, line 3. In this method, a unit specific marker is either an acceptor or donor, and the marker interacts with a matrix or lattice of complementary beads (stations), wherein the bead is either a donor or an acceptor, respectively. Fig. 1 below demonstrates the case wherein the unit specific marker is a fluorescent acceptor, and one or more station beads are fluorescent donors. The fluorescent acceptor labeled polymers are passed through the bead matrix and detected by the impulses generated by the fluorescent donor/acceptor interaction, as shown in Fig. 1 below.



D: Fluorescent Donor, A: Fluorescent Acceptor.

Fig. 1 (Gilmanshin et al.)

In contrast to the methods of Gilmanshin et al., the claimed invention is directed to a method of single molecule identification wherein the molecule is detected using an optically distinguishable material having a size of about 0.05 μm or greater, which can be observed visually. The optically distinguishable material is chemically bonded to a DNA sequence recognition unit, such as an oligonucleotide. When DNA sequence recognition units are hybridized with the target DNA, a linear order of the optically distinguishable material can be read

optically, indicating the DNA sequence. This is demonstrated in the Figure of the application, and in Fig. 2 below, wherein a, b, c, and d represent optically distinguishable materials, each of which has a different physical characteristic (size, color, shape) (*see* page 5, lines 18-24 of the application).

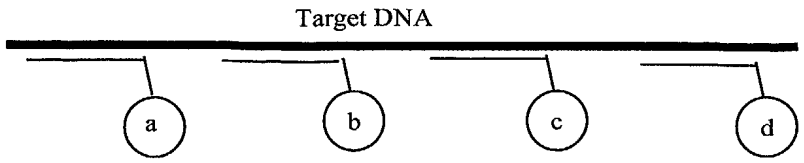


Fig. 2 (invention)

The claimed invention allows direct optical visualization of the order of the labeled sequence recognition units.

As set forth above, Gilmanshin et al. determines nucleic acid sequences using a dye-dye interaction to generate a visible indicator in the form of an object-dependent impulse. In contrast, the claimed invention uses optically distinguishable material to identify target sequences or molecules, wherein the material can be seen directly, without a need for further interactions (for example, with a station) or use of special monitoring equipment. No object-dependent impulse is generated by the optically distinguishable materials of the invention. In view of the above remarks, reconsideration and withdrawal of the rejection of Claims 1-14 under 35 U.S.C. 102(a) over Gilmanshin et al. are in order.

This application is now considered to be in condition for allowance. Prompt and favorable action in the form of a Notice of Allowance is respectfully requested.

Should the examiner require anything further, the examiner is invited to contact Applicants' attorney.

Respectfully submitted,

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